

His	Gly	His	Glu	Glu	Asp	Pro	Asn	Gln	Ile	Pro	Asn	Asn	Ile	Arg	Arg
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Cys	Asp	Val	Met	His	Ile	Phe	His	Ser	Gly	Ile	Pro	Gln	Ser	Leu	Gln
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230															
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Ser	Lys	Gln	Gln	Leu	Gln	Tyr	Ala	Ala	Thr	Asp	Ala	Tyr	Ala	Ser	Trp
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265															
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275															
280															
285															
Asp	Leu	Glu	Ala	Lys	Ile	Ser	His	Arg	Ser	Asn	Tyr	Asn	Thr	Val	Thr
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<400> 3

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<400> 4

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35															45
Thr	Leu	Thr	Lys	Pro	Gln	Glu	Glu	Tyr	Lys	Ile	Leu	Val	Asp	Asn	Ala
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 Ala Ser Ser Leu Ser Leu Glu Lys Val Cys Val Asp Asp Ser Lys Lys
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 Gln Ser Ser Gly Phe Gly Val Leu Pro Leu Lys Arg Lys Leu Glu Ser
 465 470 475 480
 Asp Lys Thr Val Val Glu Lys Asn Ile Glu Pro Lys Ile Glu Lys Thr
 485 490 495
 Gly Thr Glu Ala Ser Ala Ser Ser Leu Ser Ser Lys Lys Val Cys Val
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 Asp Asp Ser Lys Lys Gln Ser Ser Gly Phe Gly Val Leu Leu Ser Lys
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 530 535 540
 Lys Val Ser Lys Ser Lys Pro Asp Lys Val Ile Ile Val Val Asp Asp
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 Ser Leu Thr Gln Lys Pro Lys Thr Cys Asn Thr Glu Val Ile Val Leu
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gtgcgatatg cttagaacaga tgcacactat ctgctttata ttgcagatag ttgcacaact 660
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<211> 237

<212> PRT

<213> *Arabidopsis thaliana*

<400> 6

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20 25 30

Leu Glu Asn Pro Gln Ile Glu Phe Gly Phe Leu Arg Gly Glu Cys Ser
35 40 45

Leu Glu Met Ser Asp Ser Tyr Val Trp Val Glu Thr Glu Ser Gln Leu
50 55 60

Lys Glu Leu Ala Glu Ile Leu Ala Lys Glu Gln Val Phe Ala Val Asp
65 70 75 80

Thr Glu Gln His Ser Leu Arg Ser Phe Leu Gly Phe Thr Ala Leu Ile
85 90 95

Gln Ile Ser Thr His Glu Glu Asp Phe Leu Val Asp Thr Ile Ala Leu
100 105 110

His Asp Val Met Ser Ile Leu Arg Pro Val Phe Ser Asp Pro Asn Ile
115 120 125

Cys Lys Val Phe His Gly Ala Asp Asn Asp Val Ile Trp Leu Gln Arg
130 135 140

Asp Phe His Ile Tyr Val Val Asn Met Phe Asp Thr Ala Lys Ala Cys
145 150 155 160

Glu Val Leu Ser Lys Pro Gln Arg Ser Leu Ala Tyr Leu Leu Glu Thr
165 170 175

Val Cys Gly Val Ala Thr Asn Lys Leu Leu Gln Arg Glu Asp Trp Arg
180 185 190

Gln Arg Pro Leu Ser Glu Glu Met Val Arg Tyr Ala Arg Thr Asp Ala
195 200 205

His Tyr Leu Leu Tyr Ile Ala Asp Ser Leu Thr Thr Glu Leu Lys Gln
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225 230 235

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<212> PRT
<213> Arabidopsis thaliana

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Tyr Ile Thr Lys Val Ile His Asp Cys Lys Arg Asp Ser Glu Ala Leu
35 40 45

Tyr Phe Gln Phe Gly Ile Arg Leu His Asn Val Val Asp Thr Gln Ile
50 55 60

Ala Tyr Ser Leu Ile Glu Glu Gln Glu Gly Arg Arg Arg Pro Leu Asp
65 70 75 80

Asp Tyr Ile Ser Phe Val Ser Leu Leu Ala Asp Pro Arg Tyr Cys Gly
85 90 95

Ile Ser Tyr Glu Glu Lys Glu Glu Val Arg Val Leu Met Arg Gln Asp
 100 105 110
 Pro Lys Phe Trp Thr Tyr Arg Pro Met Thr Glu Leu Met Ile Arg Ala
 115 120 125
 Ala Ala Asp Asp Val Arg Phe Leu Leu Tyr Leu Tyr His Lys Met Met
 130 135 140
 Gly Lys Leu Asn Gln Arg Ser Leu Trp His Leu Ala Val Arg Gly Ala
 145 150 155 160
 Leu Tyr Cys Arg Cys Leu Cys Cys Met Asn Asp Ala Asp Phe Ala Asp
 165 170 175
 Trp Pro Thr Val Pro Pro Ile Pro Val Phe Leu Val Lys Val Val Tyr
 180 185 190
 Ala Val Glu Thr Lys Lys Arg Arg Val Thr Leu Ala Ser Ile Gly
 195 200 205
 Leu Leu Ile Val Val Gly Leu Leu Asn Val Ala Asp Asn Leu Lys Ser
 210 215 220
 Glu Asp Gln Cys Leu Glu Glu Glu Ile Leu Ser Val Leu Asp Val Pro
 225 230 235 240
 Pro Gly Lys Met Gly Arg Val Ile Gly Arg Lys Gly Ala Ser Ile Leu
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 260 265 270
 Gly Pro Pro Asp Lys Val Ser Leu Ile Pro
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<211> 239
<212> PRT
<213> Arabidopsis thaliana

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20 25 30

Thr Thr Ser Thr Ile Arg Arg Trp Ile His Ser Ile Arg Phe Phe Ser
35 40 45

Arg Leu Arg Ser Ser His Pro Leu Val Val Gly Leu Asp Val Gln Trp
50 55 60

Thr Pro Gly Gly Ser Asp Pro Pro Asp Ile Leu Gln Leu Cys Val
65 70 75 80

Gly Asn Arg Cys Leu Ile Ile Gln Leu Ser His Cys Lys Arg Ile Pro
85 90 95

Glu Val Leu Arg Ser Phe Leu Glu Asp Glu Thr Ile Thr Phe Val Gly
100 105 110

Val Trp Asn Ser Gln Asp Gln Gly Lys Leu Glu Arg Phe Arg His Gln
115 120 125

Leu Glu Ile Trp Arg Leu Leu Asp Ile Arg His Tyr Leu Pro Thr Arg
130 135 140

Leu Leu Asn Ser Ser Phe Glu Lys Ile Val Glu Glu Cys Leu Gly Tyr
145 150 155 160

Lys Gly Val Arg Lys Asp Lys Glu Ile Cys Met Ser Asn Trp Gly Ala
165 170 175

Arg Ser Leu Ser His Asp Gln Ile Val Gln Ala Ser Asp Asp Val Tyr
180 185 190

Val Cys Cys Lys Leu Gly Val Lys Glu Cys Ile Trp Lys Glu Arg Ser
195 200 205

Asn Val Lys Glu Arg Ile Trp Lys Glu Ser Ser Asn Val Lys Glu His
210 215 220

Ile Trp Lys Glu Ser Ser Lys Leu Tyr Phe Val Gly Val Cys Phe
225 230 235

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<212> DNA
<213> Arabidopsis thaliana

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<212> PRT
<213> *Arabidopsis thaliana*

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35 40 45
Trp Ile His Ser Ile Arg Phe Val Ser Arg Leu Arg Leu Ser His Pro
50 55 60
Leu Val Val Gly Leu Gly Val Gln Trp Thr Pro Arg Gly Ser Asp Pro
65 70 75 80
Pro Pro Asp Ile Leu Gln Leu Cys Val Gly Thr Arg Cys Leu Ile Ile
85 90 95
Gln Leu Ser His Cys Lys Tyr Val Pro Asp Val Leu Arg Ser Phe Leu
100 105 110
Glu Asp Gln Thr Ile Thr Phe Val Gly Val Trp Asn Ser Gln Asp Lys
115 120 125
Asp Lys Leu Glu Arg Phe His His Gln Leu Asp Ile Trp Arg Leu Val
130 135 140
His Ile Arg His Tyr Leu His Pro Leu Leu Leu Ser Ser Ser Phe Glu
145 150 155 160
Thr Ile Val Lys Val Tyr Leu Gly His Glu Gly Val Thr Lys Asp Lys
165 170 175
Glu Leu Cys Met Ser Asn Trp Gly Ala Arg Ser Leu Ser His Asp Gln
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Ile Val Gln Ala Ser His Asp Val Tyr Val Cys Cys Lys Leu Gly Val

195

200

205

Lys Glu Arg Leu Trp Lys Met Gly Ala
210 215

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<211> 261
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<213> *Arabidopsis thaliana*

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<210> 14
<211> 86
<212> PRT
<213> *Arabidopsis thaliana*

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Arg Glu Ala Glu Pro Ala Ala Leu Leu Ile Lys Leu Ile Asp Lys Gln
35 40 45

Ala Ile Phe Pro Gln Ser Glu Gln Leu Met Ile Tyr Ala Met Thr Arg
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Ala Ser Lys Ser Gly Leu His Arg Val Val Glu Ile Lys Pro Ser Ile
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Val His Val Phe Asn Leu
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<210> 15
<211> 2733
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<213> *C. elegans*

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35 40 45

Val Arg Ala Lys Asn Arg Glu Phe Phe Asn Glu Asp Tyr Arg Ser Gly

50	55	60																																																																																																																					
Val Asn Ile Tyr Gly Met Ala Val Asp Met Met Lys Ala Met Pro Asp																																																																																																																							
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Arg Gly Lys Thr Ser Gly Gln Ser Leu Ala Val Trp Tyr Leu Glu Asp																																																																																																																							
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Phe Gly Val Trp Leu Lys Glu Ser Gly Gln Glu Thr Glu Leu Arg Gln																																																																																																																							
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Lys Tyr Leu Thr Gly Thr Ile Gln Ile Asn Ala Leu Asp Val Cys Thr																																																																																																																							
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Ile Gly Gln Lys Gln Leu Leu Ser Glu Ile Phe Asp Ile Thr Lys Glu																																																																																																																							
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Lys Phe Thr Glu Asp Ile Thr Gln Leu Leu Asp Ala Ala Ile Lys Lys																																																																																																																							
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Gln Asp Phe Ser Val Ala Ala Asp Met Ala Ile Gln Tyr Asn Leu Leu																																																																																																																							
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Arg Asp His His Phe Glu His Leu Val Leu Pro Leu Met Leu Ser Gly																																																																																																																							
180	185	190																																																																																																																					
Lys Asp Gln Thr Ala Tyr Lys Leu Ile Ser Asn Asn Glu Arg Met Gln																																																																																																																							
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Ala Val Glu Glu Met Leu Lys Pro Tyr Lys Glu Thr Lys Ile Met Thr																																																																																																																							
225	230	235	240			Ile Pro Met Glu Lys Leu Thr Gly Lys Thr Leu Asp Lys Leu Ile Ser			245	250	255	Thr Ile Ile Asn Lys Asn Thr His Glu Tyr Asn Phe Ser Arg Glu Leu			260	265	270	Ser Lys Phe Ala Lys Asn His Ser Gln Asn Gly Asn Leu Lys Ala Leu			275	280	285	Lys Phe Asn Ile Ser Glu Arg Tyr Glu Lys Gly Lys Ser Asp Asp Asn			290	295	300	Tyr Phe Gln His Met Val Glu Thr Phe Thr Lys Ala Glu Asp Val Arg			305	310	315	320			Glu Pro Ile Leu Phe Tyr Leu Trp Ser Ser Asn Asp Thr Glu Lys Gln			325	330	335	Ile Asp Ala Ile Cys Phe Ala Ile Tyr Leu Gly Ile Ala Ser Ser Ser			340	345	350	Ser Tyr Gln Leu Pro Asn Val Met Arg Asp Phe Phe Arg Gln Pro Asp																																																																				
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Thr Ile Ile Asn Lys Asn Thr His Glu Tyr Asn Phe Ser Arg Glu Leu																																																																																																																							
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Ser Lys Phe Ala Lys Asn His Ser Gln Asn Gly Asn Leu Lys Ala Leu																																																																																																																							
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Tyr Phe Gln His Met Val Glu Thr Phe Thr Lys Ala Glu Asp Val Arg																																																																																																																							
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Glu Pro Ile Leu Phe Tyr Leu Trp Ser Ser Asn Asp Thr Glu Lys Gln																																																																																																																							
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Ile Asp Ala Ile Cys Phe Ala Ile Tyr Leu Gly Ile Ala Ser Ser Ser																																																																																																																							
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Gln Val Pro Leu Asn Gly Glu Gln Leu Phe Val Phe Glu Asn Glu Arg		
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Arg Thr Gln Ile His Met Val Lys Thr Glu Ser Glu Met Asn Tyr Leu		
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Cys Ser Glu Ile Lys Ser Leu Ser Asp Glu Pro Ala Pro Val Tyr Val		
420	425	430
Gly Phe Asp Ser Glu Trp Lys Pro Ser Asn Leu Thr Ala Val His Asp		
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Ser Lys Ile Ala Ile Ile Gln Leu Phe Phe Lys Asn Cys Val Trp Leu		
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Val Asp Cys Val Glu Leu Glu Lys Ala Asn Met Ala Asp Asp Trp Trp		
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Gln Lys Phe Ala Ser Arg Leu Phe Gly Asp Ser Pro Val Lys Val Val		
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Leu Lys Ser Ser Met Lys Ile Glu Asp Thr Lys Asn Ala Phe Asp Leu		
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Val Val Glu Thr Phe Lys Lys Ile Leu Ser Ile Val Glu Glu Lys Asn		
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Lys Asp Ala Asp Ile Glu Lys Ile Val Arg Glu Ser Asn Val Met Ala		
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Pro Trp Leu Glu Leu Tyr Asp Ile Leu Arg Ser His Arg Asn Pro Thr		
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Arg Ser Pro Gln Arg Pro His Asp Ile Lys Val Ile Val Asp Thr Met		

660	665	670
Leu Ile Gly Phe Gly Lys Asn Leu Arg Arg Val Gly Ile Asp Val Ile		
675	680	685
Leu Pro Lys Asp Val Ser Asp Phe Arg Lys Tyr Leu Lys Glu Ile Glu		
690	695	700
Arg Val Gly Gly Glu His Leu Arg His Ile Ile Thr Val Pro Ser Lys		
705	710	715
Ser Tyr Glu Ala Leu Lys Met Asp Tyr Asp Asn Tyr Thr Ile Ala Ile		
725	730	735
Pro Glu Leu Asn Asn Met Ser Pro Val Asp Gln Leu Ile Glu Phe Phe		
740	745	750
Asp Leu Phe Asn Val Asp Ile Arg Pro Glu Asp Val Tyr Pro Arg Cys		
755	760	765
Thr Glu Cys Asn Ser Arg Leu Gln Ile Lys Phe Pro Gly Pro Val Leu		
770	775	780
His Phe Leu His Gln Tyr Cys Val Ile His Val Gln Asn Val Tyr Arg		
785	790	795
Ala Asp Met Ser Glu Phe Pro Leu Glu Glu Trp Trp Asn Arg Met Leu		
805	810	815
His Ile Asn Pro Asp Asp Tyr Asp Gly Val Lys Val Glu Met Ser Arg		
820	825	830
Pro Ser Pro Thr Ser Lys Trp Ile Val Ala Thr Val Pro Thr Gly Cys		
835	840	845
Leu His Ile Thr Arg Gln Thr Ala Leu His Thr Asn Leu Pro Asp Gly		
850	855	860
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 50 55 60
 Leu Ser Glu Asp Ile Ser Met Ser Leu Ser Asp Gly Asp Val Val Gly
 65 70 75 80
 Phe Asp Met Glu Trp Pro Pro Leu Tyr Asn Arg Gly Lys Leu Gly Lys
 85 90 95
 Val Ala Leu Ile Gln Leu Cys Val Ser Glu Ser Lys Cys Tyr Leu Phe
 100 105 110
 His Val Ser Ser Met Ser Val Phe Pro Gln Gly Leu Lys Met Leu Leu
 115 120 125
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 130 135 140
 Trp Lys Leu Leu Arg Asp Phe Asp Ile Lys Leu Lys Asn Phe Val Glu
 145 150 155 160
 Leu Thr Asp Val Ala Asn Lys Lys Leu Lys Cys Thr Glu Thr Trp Ser
 165 170 175
 Leu Asn Ser Leu Val Lys His Leu Leu Gly Lys Gln Leu Leu Lys Asp
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Lys Glu Glu Glu Ile Leu Leu Ser Asp Met Asn Lys Gln Leu Thr Ser		
245	250	255
Ile Ser Glu Glu Val Met Asp Leu Ala Lys His Leu Pro His Ala Phe		
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Ser Lys Leu Glu Asn Pro Arg Arg Val Ser Ile Leu Leu Lys Asp Ile		
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290	295	300
Ile Glu Thr Glu Leu Arg Pro Ser Asn Asn Leu Asn Leu Leu Ser Phe		
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Glu Val Leu Ile His Val Glu Asp Glu Thr Trp Asp Pro Thr Leu Asp		
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His Leu Ala Lys His Asp Gly Glu Asp Val Leu Gly Asn Lys Val Glu		
355	360	365
Arg Lys Glu Asp Gly Phe Glu Asp Gly Val Glu Asp Asn Lys Leu Lys		
370	375	380
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Leu Lys His Leu Ser Pro Asn Asp Asn Glu Asn Asp Thr Ser Tyr Val		
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485	490	495
Met Glu Arg Asn Leu Gly Leu Pro Thr Lys Glu Glu Glu Asp Asp		

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Trp Pro Ala Pro Asn Glu Glu Gln Val Thr Cys Leu Lys Met Tyr Phe		
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Gly His Ser Ser Phe Lys Pro Val Gln Trp Lys Val Ile His Ser Val		
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Leu Glu Glu Arg Arg Asp Asn Val Ala Val Met Ala Thr Gly Tyr Gly		
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Lys Ser Leu Cys Phe Gln Tyr Pro Pro Val Tyr Val Gly Lys Ile Gly		
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Leu Val Ile Ser Pro Leu Ile Ser Leu Met Glu Asp Gln Val Leu Gln		
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Leu Lys Met Ser Asn Ile Pro Ala Cys Phe Leu Gly Ser Ala Gln Ser		
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Glu Asn Val Leu Thr Asp Ile Lys Leu Gly Lys Tyr Arg Ile Val Tyr		
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Val Thr Pro Glu Tyr Cys Ser Gly Asn Met Gly Leu Leu Gln Gln Leu		
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Glu Ala Asp Ile Gly Ile Thr Leu Ile Ala Val Asp Glu Ala His Cys		
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Ile Ser Glu Trp Gly His Asp Phe Arg Asp Ser Phe Arg Lys Leu Gly		
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Ser Leu Lys Thr Ala Leu Pro Met Val Pro Ile Val Ala Leu Thr Ala		
690	695	700
Thr Ala Ser Ser Ser Ile Arg Glu Asp Ile Val Arg Cys Leu Asn Leu		
705	710	715
Arg Asn Pro Gln Ile Thr Cys Thr Gly Phe Asp Arg Pro Asn Leu Tyr		
725	730	735
Leu Glu Val Arg Arg Lys Thr Gly Asn Ile Leu Gln Asp Leu Gln Pro		
740	745	750
Phe Leu Val Lys Thr Ser Ser His Trp Glu Phe Glu Gly Pro Thr Ile		
755	760	765
Ile Tyr Cys Pro Ser Arg Lys Met Thr Gln Gln Val Thr Gly Glu Leu		
770	775	780
Arg Lys Leu Asn Leu Ser Cys Gly Thr Tyr His Ala Gly Met Ser Phe		
785	790	795
Ser Thr Arg Lys Asp Ile His His Arg Phe Val Arg Asp Glu Ile Gln		

805	810	815
Cys Val Ile Ala Thr Ile Ala Phe Gly Met Gly Ile Asn Lys Ala Asp		
820	825	830
Ile Arg Gln Val Ile His Tyr Gly Ala Pro Lys Asp Met Glu Ser Tyr		
835	840	845
Tyr Gln Glu Ile Gly Arg Ala Gly Arg Asp Gly Leu Gln Ser Ser Cys		
850	855	860
His Val Leu Trp Ala Pro Ala Asp Ile Asn Leu Asn Arg His Leu Leu		
865	870	875
Thr Glu Ile Arg Asn Glu Lys Phe Arg Leu Tyr Lys Leu Lys Met Met		
885	890	895
Ala Lys Met Glu Lys Tyr Leu His Ser Ser Arg Cys Arg Arg Gln Ile		
900	905	910
Ile Leu Ser His Phe Glu Asp Lys Gln Val Gln Lys Ala Ser Leu Gly		
915	920	925
Ile Met Gly Thr Glu Lys Cys Cys Asp Asn Cys Arg Ser Arg Leu Asp		
930	935	940
His Cys Tyr Ser Met Asp Asp Ser Glu Asp Thr Ser Trp Asp Phe Gly		
945	950	955
960		
Pro Gln Ala Phe Lys Leu Leu Ser Ala Val Asp Ile Leu Gly Glu Lys		
965	970	975
Phe Gly Ile Gly Leu Pro Ile Leu Phe Leu Arg Gly Ser Asn Ser Gln		
980	985	990
Arg Leu Ala Asp Gln Tyr Arg Arg His Ser Leu Phe Gly Thr Gly Lys		
995	1000	1005
Asp Gln Thr Glu Ser Trp Trp Lys Ala Phe Ser Arg Gln Leu Ile Thr		
1010	1015	1020
Glu Gly Phe Leu Val Glu Val Ser Arg Tyr Asn Lys Phe Met Lys Ile		
1025	1030	1035
1040		
Cys Ala Leu Thr Lys Lys Gly Arg Asn Trp Leu His Lys Ala Asn Thr		
1045	1050	1055
Glu Ser Gln Ser Leu Ile Leu Gln Ala Asn Glu Glu Leu Cys Pro Lys		
1060	1065	1070
Lys Phe Leu Leu Pro Ser Ser Lys Thr Val Ser Ser Gly Thr Lys Glu		
1075	1080	1085
His Cys Tyr Asn Gln Val Pro Val Glu Leu Ser Thr Glu Lys Lys Ser		
1090	1095	1100
Asn Leu Glu Lys Leu Tyr Ser Tyr Lys Pro Cys Asp Lys Ile Ser Ser		

1105	1110	1115	1120
Gly Ser Asn Ile Ser Lys Lys Ser Ile Met Val Gln Ser Pro Glu Lys			
1125	1130	1135	
Ala Tyr Ser Ser Ser Gln Pro Val Ile Ser Ala Gln Glu Gln Glu Thr			
1140	1145	1150	
Gln Ile Val Leu Tyr Gly Lys Leu Val Glu Ala Arg Gln Lys His Ala			
1155	1160	1165	
Asn Lys Met Asp Val Pro Pro Ala Ile Leu Ala Thr Asn Lys Ile Leu			
1170	1175	1180	
Val Asp Met Ala Lys Met Arg Pro Thr Thr Val Glu Asn Val Lys Arg			
1185	1190	1195	1200
Ile Asp Gly Val Ser Glu Gly Lys Ala Ala Met Leu Ala Pro Leu Leu			
1205	1210	1215	
Glu Val Ile Lys His Phe Cys Gln Thr Asn Ser Val Gln Thr Asp Leu			
1220	1225	1230	
Phe Ser Ser Thr Lys Pro Gln Glu Glu Gln Lys Thr Ser Leu Val Ala			
1235	1240	1245	
Lys Asn Lys Ile Cys Thr Leu Ser Gln Ser Met Ala Ile Thr Tyr Ser			
1250	1255	1260	
Leu Phe Gln Glu Lys Lys Met Pro Leu Lys Ser Ile Ala Glu Ser Arg			
1265	1270	1275	1280
Ile Leu Pro Leu Met Thr Ile Gly Met His Leu Ser Gln Ala Val Lys			
1285	1290	1295	
Ala Gly Cys Pro Leu Asp Leu Glu Arg Ala Gly Leu Thr Pro Glu Val			
1300	1305	1310	
Gln Lys Ile Ile Ala Asp Val Ile Arg Asn Pro Pro Val Asn Ser Asp			
1315	1320	1325	
Met Ser Lys Ile Ser Leu Ile Arg Met Leu Val Pro Glu Asn Ile Asp			
1330	1335	1340	
Thr Tyr Leu Ile His Met Ala Ile Glu Ile Leu Lys His Gly Pro Asp			
1345	1350	1355	1360
Ser Gly Leu Gln Pro Ser Cys Asp Val Asn Lys Arg Arg Cys Phe Pro			
1365	1370	1375	
Gly Ser Glu Glu Ile Cys Ser Ser Lys Arg Ser Lys Glu Glu Val			
1380	1385	1390	
Gly Ile Asn Thr Glu Thr Ser Ser Ala Glu Arg Lys Arg Arg Leu Pro			
1395	1400	1405	
Val Trp Phe Ala Lys Gly Ser Asp Thr Ser Lys Lys Leu Met Asp Lys			

1410	1415	1420
Thr Lys Arg Gly Gly Leu Phe Ser		
1425	1430	
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<211> 30		
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cgacatgatc tgatacatcg ttatgccatt		30
<210> 20		
<211> 29		
<212> DNA		
<213> Artificial Sequence		
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<400> 20		
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<210> 21		
<211> 1041		
<212> DNA		
<213> Arabidopsis thaliana		
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gttcccgattt acattgtgac ggatccgttt caacttcctg ctgatttcct aaacccttct 120		
cctgaaaaga aattggttat cggttttgac tggagggtt ttgacctctg ccgacatggg 180		
aaactttgtt tcatgcagat tgcatttcct aatgcaataat acttggttga tggatcatcgaa 240		
ggtggagagg tgattatgaa agcgtgtaag cctgcactcg agtctaatta catcagaaa 300		
gttatttcacg attgcaagcg tgacagttag gctctatact tccagtttgg gataagattg 360		
cacaatgtt tggacactca gattgcttat tctctgattt aagaacaaga agggcggagg 420		
agacctctag atgattacat atcggttgc tcaacttcctg ctgatccacg ttactgcgt 480		
atatcctatg aagagaaaaga agaagttcga gttctcatgc gccagacccc aaagtttgg 540		
acatacaggc ctatgactga gctcatgatc cgccgagctg ctgatgatgt ccgttccctt 600		
ctgtatctt atcacaaaat gatgggaaag ctaaatcagc ggtcaatctg gcatcttgca 660		
gttcgtgggt cttgtactg tcgggtctc tgctgcattt atgatgttgc ttgttgcgt 720		
tggccaaaccg ttccctccat tccagtttgc ctcgttaagg tcgtatatgc tggatggaca 780		
aagaaaaaaa gacgggtgac attagcttcg attgggttac tgattgttagt tggactttt 840		
aatgtggcag ataacctgaa gtcagaagat caatgtctt aagaagagat cctgtcagt 900		
cttgatgttc caccaggaaa gatgggacgt gtgatggaa ggaaaggagc atcgtatccc 960		
gccattaagg aagcttgcgaa cgccggaaatt ctaatggag gggcaaggg tccacctgt 1020		
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<210> 22

<211> 346

<212> PRT

<213> Arabidopsis thaliana

<400> 22

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Asn Glu Pro Pro Val Pro Ile Tyr Ile Val Thr Asp Pro Phe Gln Leu
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Pro Ala Asp Phe Leu Asn Pro Ser Pro Glu Lys Lys Leu Val Ile Gly
35 40 45

Phe Asp Cys Glu Gly Val Asp Leu Cys Arg His Gly Lys Leu Cys Ile
50 55 60

Met Gln Ile Ala Phe Ser Asn Ala Ile Tyr Leu Val Asp Val Ile Glu
65 70 75 80

Gly Gly Glu Val Ile Met Lys Ala Cys Lys Pro Ala Leu Glu Ser Asn
85 90 95

Tyr Ile Thr Lys Val Ile His Asp Cys Lys Arg Asp Ser Glu Ala Leu
100 105 110

Tyr Phe Gln Phe Gly Ile Arg Leu His Asn Val Val Asp Thr Gln Ile
115 120 125

Ala Tyr Ser Leu Ile Glu Glu Gln Glu Gly Arg Arg Arg Pro Leu Asp
130 135 140

Asp Tyr Ile Ser Phe Val Ser Leu Leu Ala Asp Pro Arg Tyr Cys Gly
145 150 155 160

Ile Ser Tyr Glu Glu Lys Glu Val Arg Val Leu Met Arg Gln Asp
165 170 175

Pro Lys Phe Trp Thr Tyr Arg Pro Met Thr Glu Leu Met Ile Arg Ala
180 185 190

Ala Ala Asp Asp Val Arg Phe Leu Leu Tyr Leu Tyr His Lys Met Met
195 200 205

Gly Lys Leu Asn Gln Arg Ser Leu Trp His Leu Ala Val Arg Gly Ala
210 215 220

Leu Tyr Cys Arg Cys Leu Cys Cys Met Asn Asp Ala Asp Phe Ala Asp
225 230 235 240

Trp Pro Thr Val Pro Pro Ile Pro Val Phe Leu Val Lys Val Val Tyr
245 250 255

Ala Val Glu Thr Lys Lys Lys Arg Arg Val Thr Leu Ala Ser Ile Gly
260 265 270

Leu Leu Ile Val Val Gly Leu Leu Asn Val Ala Asp Asn Leu Lys Ser
275 280 285

Glu Asp Gln Cys Leu Glu Glu Ile Leu Ser Val Leu Asp Val Pro
290 295 300

Pro Gly Lys Met Gly Arg Val Ile Gly Arg Lys Gly Ala Ser Ile Leu
305 310 315 320

Ala Ile Lys Glu Ala Cys Asn Ala Glu Ile Leu Ile Gly Gly Ala Lys
325 330 335

Gly Pro Pro Asp Lys Val Ser Leu Ile Pro
340 345

<210> 23

<211> 1049

<212> DNA

<213> Arabidopsis thaliana

<400> 23

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atttctcccg ttcttcttct tcttcttcct ctgctgctcc gaccgtacaa gctacaacct 180
ccgtccatgg ccacgaggag gatccaaatc aaatccccaa taatatccgt cgccaaattgc 240
ctcgttccat cacttcttct acatcttata aacgatttcc tctctcccg tgccgagcta 300
ggaattttcc agcaatgagg tttgggtgta ggattttgta tagcaagact gctactgagg 360
ttgataagcg agcaatgcag cttattaaag ttcttgatac caagagagat gaatctggaa 420
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ggaagggtgc gactgtccag atatgtgtat atagtaatta ttgtgatgtt atgcataattt 540
ttcattctgg tatccctcaa agtctccaaac atcttattga agattcaaca cttgtaaagg 600
tagtattgg aattgatggt gactctgtga agctttcca tgactatggaa gttagttatca 660
aagatgtga ggatcttca gatttagcca accaaaaat tggtggagat aaaaaatggg 720
gccttgcctc actaactgag acacttggttt gcaaagagct cctgaagcca aacagaatca 780
ggcttgggaa ctgggagttt tatcctctgt caaagcagca gttacaatac gcagcaacgg 840
atgcttatgc ttcatggcat ctttacaagg ttcttaagga ccttcctgat gctgtcagtg 900
gctcataacg tgaaggagga agcttaaagg tttagctata accccaagag ttagcatcaa 960
atgatatgt acacctaatac tagtcaagta gatgcaattc ttgtgaatat tgtatctagt 1020
tctggccct ttaaccgtcc agaaaactag 1049

<210> 24

<211> 288

<212> PRT

<213> Arabidopsis thaliana

<400> 24

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Leu Ala Ile Asp Ala Ile Glu Ala Ser Tyr Asn Phe Ser Arg Ser Ser
20 25 30

Ser Ser Ser Ser Ser Ala Ala Pro Thr Val Gln Ala Thr Thr Ser Val
35 40 45

His	Gly	His	Glu	Glu	Asp	Pro	Asn	Gln	Ile	Pro	Asn	Asn	Ile	Arg	Arg
50															
														60	
Gln	Leu	Pro	Arg	Ser	Ile	Thr	Ser	Ser	Thr	Ser	Tyr	Lys	Arg	Phe	Pro
65															
														75	80
Leu	Ser	Arg	Cys	Arg	Ala	Arg	Asn	Phe	Pro	Ala	Met	Arg	Phe	Gly	Gly
85														95	
Arg	Ile	Leu	Tyr	Ser	Lys	Thr	Ala	Thr	Glu	Val	Asp	Lys	Arg	Ala	Met
100														110	
Gln	Leu	Ile	Lys	Val	Leu	Asp	Thr	Lys	Arg	Asp	Glu	Ser	Gly	Ile	Ala
115														125	
Phe	Val	Gly	Leu	Asp	Ile	Glu	Trp	Arg	Pro	Ser	Phe	Arg	Lys	Gly	Val
130														140	
Leu	Pro	Gly	Lys	Val	Ala	Thr	Val	Gln	Ile	Cys	Val	Asp	Ser	Asn	Tyr
145														155	160
Cys	Asp	Val	Met	His	Ile	Phe	His	Ser	Gly	Ile	Pro	Gln	Ser	Leu	Gln
165														175	
His	Leu	Ile	Glu	Asp	Ser	Thr	Leu	Val	Lys	Val	Gly	Ile	Gly	Ile	Asp
180														190	
Gly	Asp	Ser	Val	Lys	Leu	Phe	His	Asp	Tyr	Gly	Val	Ser	Ile	Lys	Asp
195														205	
Val	Glu	Asp	Leu	Ser	Asp	Leu	Ala	Asn	Gln	Lys	Ile	Gly	Gly	Asp	Lys
210														220	
Lys	Trp	Gly	Leu	Ala	Ser	Leu	Thr	Glu	Thr	Leu	Val	Cys	Lys	Glu	Leu
225														240	
230															
Leu	Lys	Pro	Asn	Arg	Ile	Arg	Leu	Gly	Asn	Trp	Glu	Phe	Tyr	Pro	Leu
245														255	
Ser	Lys	Gln	Gln	Leu	Gln	Tyr	Ala	Ala	Thr	Asp	Ala	Tyr	Ala	Ser	Trp
260														270	
His	Leu	Tyr	Lys	Val	Leu	Lys	Asp	Leu	Pro	Asp	Ala	Val	Ser	Gly	Ser
275														285	

<210> 25
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 Oligonucleotide

<400> 25
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<210> 26		
<211> 22		
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Oligonucleotide		
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<210> 27		
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<210> 28		
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<213> Description of Artificial Sequence:		
Oligonucleotide		
Other n=a, c, g, or t		
<400> 28		
wgtgnagwan canaga		16
<210> 29		
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gctccggcca cataattcaa acaacac		27
<210> 30		
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Oligonucleotide		
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ttcgaaaaca ttacctccga tc		22
<210> 31		
<211> 25		
<212> DNA		
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Oligonucleotide		
<400> 31		
ggctttgca ttggtatct actag		25

<210> 32		
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<212> DNA		
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Oligonucleotide		
<400> 32		
atgtcatcgt caaattggat cgacg	25	
<210> 33		
<211> 27		
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<400> 33		
cgcttatcaa cctcagtagc agtcttg	27	
<210> 34		
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<212> DNA		
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<400> 34		
ttatgagcca ctgacagcat cagg	24	
<210> 35		
<211> 1749		
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<213> Arabidopsis thaliana		
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CAAAGGCCCTT TGAGCCAGAA TCAGCTTGAG TATGCTGCTC TTGATGCTGC AGTGTGATT	1620
CACATATTTG GCCATGTTCG CGATCATCCT CCACATGACA GTAGTTAGA GACAACCCAG	1680
TGGAAATCTC ACATTGTAAG TACCTCTTAT AAAAGCCCTT ATCTTCATC TGATAATTCA	1740
AGACGATAA	1749

<210> 36
 <211> 582
 <212> PRT
 <213> *Arabidopsis thaliana*

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Tyr Val Ser Pro Val Val Phe Leu Tyr Leu Leu Lys Glu Cys Tyr Lys		
35	40	45
His Gly Ser Leu Lys Ala Thr Lys Lys Phe Gln Ala Leu Gln Tyr Gln		
50	55	60
Val His Arg Val Leu Ala Asn Lys Pro Gln Pro Gly Pro Ala Thr Phe		
65	70	75
		80
Ile Ile Asn Cys Leu Thr Leu Leu Pro Leu Phe Gly Val Tyr Gly Glu		
85	90	95
Gly Phe Ser His Leu Val Ile Ser Ala Leu Arg Arg Phe Phe Lys Thr		
100	105	110
Val Ser Glu Pro Thr Ser Glu Glu Asp Ile Cys Leu Ala Arg Lys Leu		
115	120	125
Ala Ala Gln Phe Phe Leu Ala Thr Val Gly Gly Ser Leu Thr Tyr Asp		
130	135	140
Glu Lys Val Met Val His Thr Leu Arg Val Phe Asp Val Arg Leu Thr		
145	150	155
		160
Ser Ile Asp Glu Ala Leu Ser Ile Ser Glu Val Trp Gln Arg Tyr Gly		
165	170	175
Phe Ala Cys Gly Asn Ala Phe Leu Glu Gln Tyr Ile Ser Asp Leu Ile		
180	185	190
Lys Ser Lys Ser Phe Met Thr Ala Val Thr Leu Leu Glu His Phe Ser		
195	200	205
Phe Arg Phe Pro Gly Glu Thr Phe Leu Gln Gln Met Val Glu Asp Lys		
210	215	220
Asn Phe Gln Ala Ala Glu Arg Trp Ala Thr Phe Met Gly Arg Pro Ser		
225	230	235
		240

Leu Cys Ile Leu Val Gln Glu Tyr Gly Ser Arg Asn Met Leu Lys Gln
 245 250 255
 Ala Tyr Asn Ile Ile Asn Lys Asn Tyr Leu Gln His Asp Phe Pro Glu
 260 265 270
 Leu Tyr His Lys Cys Lys Glu Ser Ala Leu Lys Val Leu Ala Glu Lys
 275 280 285
 Ala Cys Trp Asp Val Ala Glu Ile Lys Thr Lys Gly Asp Arg Gln Leu
 290 295 300
 Leu Lys Tyr Leu Val Tyr Leu Ala Val Glu Ala Gly Tyr Leu Glu Lys
 305 310 315 320
 Val Asp Glu Leu Cys Asp Arg Tyr Ser Leu Gln Gly Leu Pro Lys Ala
 325 330 335
 Arg Glu Ala Glu Val Ala Phe Val Glu Lys Ser Phe Leu Arg Leu Asn
 340 345 350
 Asp Leu Ala Val Glu Asp Val Val Trp Val Asp Glu Val Asn Glu Leu
 355 360 365
 Arg Lys Ala Thr Ser Phe Leu Glu Gly Cys Arg Val Val Gly Ile Asp
 370 375 380
 Cys Glu Trp Lys Pro Asn Tyr Ile Lys Gly Ser Lys Gln Asn Lys Val
 385 390 395 400
 Ser Ile Met Gln Ile Gly Ser Asp Thr Lys Ile Phe Ile Leu Asp Leu
 405 410 415
 Ile Lys Leu Tyr Asn Asp Ala Ser Glu Ile Leu Asp Asn Cys Leu Ser
 420 425 430
 His Ile Leu Gln Ser Lys Ser Thr Leu Lys Leu Val Ser Leu Thr Glu
 435 440 445
 Asp Tyr Pro Asp His Lys Leu Ser Ser Gly Tyr Asn Phe Gln Cys Asp
 450 455 460
 Ile Lys Gln Leu Ala Leu Ser Tyr Gly Asp Leu Lys Cys Phe Glu Arg
 465 470 475 480
 Tyr Asp Met Leu Leu Asp Ile Gln Asn Val Phe Asn Glu Pro Phe Gly
 485 490 495
 Gly Leu Ala Gly Leu Thr Lys Lys Ile Leu Gly Val Ser Leu Asn Lys
 500 505 510
 Thr Arg Arg Asn Ser Asp Trp Glu Gln Arg Pro Leu Ser Gln Asn Gln
 515 520 525
 Leu Glu Tyr Ala Ala Leu Asp Ala Ala Val Leu Ile His Ile Phe Arg
 530 535 540

His Val Arg Asp His Pro Pro His Asp Ser Ser Ser Glu Thr Thr Gln
545 550 555 560

Trp Lys Ser His Ile Val Ser Thr Ser Tyr Lys Ser Pro Tyr Leu Ser
565 570 575

Ser Asp Asn Ser Arg Arg
580

<210> 37
<211> 1518
<212> DNA
<213> *Arabidopsis thaliana*

<400> 37

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CACTCCAATA	CCTCGTCGTT	TCCGACCGTC	ACTCTCCTCC	AAAGTCGCATG	CCGACTCAGT	180
CACGCCACGG	ATGCTCTCGGA	TGTCTTCCTC	ATTGATTGTA	GTTCGATTCA	TCTTCCATCG	240
GTTTGGGAGC	TGTTGAATGA	TATGTTCTGT	TCGCCGGATG	TTCTGAAACT	AGGGTTTCGG	300
TTTAAACAGG	ATTGGTTTA	CTTGTCTTCG	ACATTAACTC	AACATGGATG	TGAAGGTGGA	360
TTCCAAGAGG	TGAAACAATA	CTTGGATATT	ACAAGCATAT	ACAATTATCT	GCAACATAAG	420
CGGTTTGGGA	GAAAGGCGCC	AAAGGATATC	AAGAGCTTGG	CTGCTATATG	TAAGGAAATG	480
CTGGACATCT	CTCTCTCAA	GGAACTTCAA	TGTAGTGATT	GGTCATATCG	TCCCTCTACA	540
GAAGAACAGA	AACTATACCC	TGCCACAGAT	GCTCACTGCC	TGCTCCAGAT	ATTCGATGTA	600
TTTGGGGC	ATCTTGTGA	AGGAATCACA	GTGCAAGATC	TTAGAGTGT	AAATGTTGGC	660
TTACAAGAAA	TTCTGACTGA	ATCGGACTAT	AGCAGTAAGA	TTGTCACAGT	CAAACTTGC	720
AAGGCTACAG	ATGTAATCAG	ATCAATGTCG	GAAAATGGTC	AAAACATAGC	CAATGGAGTG	780
GTTCCAAGAA	AAACGACACT	AAACACGATG	CCAATGGATG	AGAATTGTT	GAAGATTGTC	840
AGGAAGTTG	GAGAACGGAT	CCTGTTGAAG	GAGTCTGATC	TTCTACCAAA	GAAACTTAAG	900
AAGAAAACAA	GAAGACGTGT	CGCCTCAAGC	ACTATGAACA	CAAATAAGCA	GTGGTCTGT	960
TCTGCGGACT	GGCAAGGTCC	ACCGCCATGG	GACTCATCTT	TAGGCGGTGA	TGGCTGCCCT	1020
AAATTCTAT	TGGATGTGAT	GGTTGAAGGT	TTGGCGAAC	ATCTACGTTG	TGTGGGGATT	1080
GATGCTGCA	TCCCACACTC	AAAGAAGCCG	GATTCAAGGG	AGTTGCTTG	TCAAGCATT	1140
AAAGAGAAC	GAGTTCTATT	AAACAAGAGAT	ACAAAATTGT	TGAGACACCA	GGATTTGGCA	1200
AAGCATCAA	TATATCGAGT	AAAGAGTCTT	CTTAAAAATG	AGCAGCTACT	TGAGGTGATA	1260
GAGACTTCC	AGCTAAAGAT	CAGCGGAAAT	CAGCTGATGT	CCAGATGTAC	GAAGTGCAAT	1320
GGGAAATTAA	TTCAGAAACC	TCTAAGCATT	GAAGAAGCTA	TTGAAGCAGC	AAAGGGTTTC	1380
CAAAGAATAC	CCAACTGCTT	ATTTAACAAA	AATTTAGAGT	TTTGGCACTG	CATGAACTGC	1440
CATCAACTAT	ACTGGGAGGG	AACTCAGTAT	CATAACCGAG	TCCAGAAAGTT	CATGGAAGTA	1500
TGCAAGTGTG	TGAGGTGAT					1518

<210> 38
<211> 505
<212> PRT
<213> *Arabidopsis thaliana*

<400> 38

Met	Glu	Thr	Asn	Leu	Lys	Ile	Tyr	Leu	Val	Ser	Ser	Thr	Asp	Ser	Ser
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20 25 30

Leu Asp Ala Glu Trp Lys Pro Gln His Ser Asn Thr Ser Ser Phe Pro
35 40 45

Thr Val Thr Leu Leu Gln Val Ala Cys Arg Leu Ser His Ala Thr Asp

50	55	60		
Val Ser Asp Val Phe Leu Ile Asp Leu Ser Ser Ile His Leu Pro Ser				
65	70	75	80	
Val Trp Glu Leu Leu Asn Asp Met Phe Val Ser Pro Asp Val Leu Lys				
85		90	95	
Leu Gly Phe Arg Phe Lys Gln Asp Leu Val Tyr Leu Ser Ser Thr Phe				
100		105	110	
Thr Gln His Gly Cys Glu Gly Phe Gln Glu Val Lys Gln Tyr Leu				
115		120	125	
Asp Ile Thr Ser Ile Tyr Asn Tyr Leu Gln His Lys Arg Phe Gly Arg				
130	135		140	
Lys Ala Pro Lys Asp Ile Lys Ser Leu Ala Ala Ile Cys Lys Glu Met				
145	150	155	160	
Leu Asp Ile Ser Leu Ser Lys Glu Leu Gln Cys Ser Asp Trp Ser Tyr				
165		170	175	
Arg Pro Leu Thr Glu Glu Gln Lys Leu Tyr Ala Ala Thr Asp Ala His				
180		185	190	
Cys Leu Leu Gln Ile Phe Asp Val Phe Glu Ala His Leu Val Glu Gly				
195		200	205	
Ile Thr Val Gln Asp Leu Arg Val Ile Asn Val Gly Leu Gln Glu Ile				
210	215		220	
Leu Thr Glu Ser Asp Tyr Ser Ser Lys Ile Val Thr Val Lys Leu Cys				
225	230	235	240	
Lys Ala Thr Asp Val Ile Arg Ser Met Ser Glu Asn Gly Gln Asn Ile				
245		250	255	
Ala Asn Gly Val Val Pro Arg Lys Thr Thr Leu Asn Thr Met Pro Met				
260		265	270	
Asp Glu Asn Leu Leu Lys Ile Val Arg Lys Phe Gly Glu Arg Ile Leu				
275		280	285	
Leu Lys Glu Ser Asp Leu Leu Pro Lys Lys Leu Lys Lys Lys Thr Arg				
290		295	300	
Arg Arg Val Ala Ser Ser Thr Met Asn Thr Asn Lys Gln Leu Val Cys				
305		310	315	320
Ser Ala Asp Trp Gln Gly Pro Pro Pro Trp Asp Ser Ser Leu Gly Gly				
325		330	335	
Asp Gly Cys Pro Lys Phe Leu Leu Asp Val Met Val Glu Gly Leu Ala				
340		345	350	
Lys His Leu Arg Cys Val Gly Ile Asp Ala Ala Ile Pro His Ser Lys				

355	360	365	
Lys Pro Asp Ser Arg Glu Leu Leu Asp Gln Ala Phe Lys Glu Asn Arg			
370	375	380	
Val Leu Leu Thr Arg Asp Thr Lys Leu Leu Arg His Gln Asp Leu Ala			
385	390	395	400
Lys His Gln Ile Tyr Arg Val Lys Ser Leu Leu Lys Asn Glu Gln Leu			
405	410	415	
Leu Glu Val Ile Glu Thr Phe Gln Leu Lys Ile Ser Gly Asn Gln Leu			
420	425	430	
Met Ser Arg Cys Thr Lys Cys Asn Gly Lys Phe Ile Gln Lys Pro Leu			
435	440	445	
Ser Ile Glu Glu Ala Ile Glu Ala Ala Lys Gly Phe Gln Arg Ile Pro			
450	455	460	
Asn Cys Leu Phe Asn Lys Asn Leu Glu Phe Trp Gln Cys Met Asn Cys			
465	470	475	480
His Gln Leu Tyr Trp Glu Gly Thr Gln Tyr His Asn Ala Val Gln Lys			
485	490	495	
Phe Met Glu Val Cys Lys Leu Ser Glu			
500	505		

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